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ABSTRACT

This report is an abridgement of HE 001 613 which described an extensive research project at Brown University on the determination and usefulness of nonacademic admission criteria in the selection of college students. This report puts the problem of admission at selective colleges in historical perspective and discusses the results of the study in non-technical terms. One of the purposes of the study was to determine how "successful" apparently "risky" students were after finishing college. Risk was defined in terms of verbal aptitude scores of the College Board. Success was defined in terms of: (1) graduation from college; (2) graduate education; and (3) reputation for success. The records of "risks" in the classes of 1950-1952 and 1966-1968 were studied. Three major sources of information which might have some bearing on the problem of predicting success were hypothesized: (1) the comments of the school and the degree of enthusiasm they expressed about the applicant; (2) the background of the applicant: parents' education, school attended, town he lived in; and (3) the applicant's activities in high school. Evidence of a better environmental background proved to be the best predictor for success, but admissions officers were encouraged to continue relying on intuition in making final decisions. (AF)

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NEW MEASUREMENTS FOR ADMISSION

an abridgement and an interpretation of the study of admission criteria and risks at Brown University under a grant from the Ford Foundation

by

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Introduction

This booklet is a companion piece to the report on the study of admission criteria which Brown University undertook with support from the Ford Foundation. Dr. Nicholson's study[1] has been imaginatively conceived and meticulously carried out. It says a good many things which admission officers and guidance counselors should know: a number of them are new and a few are controversial.

As one who wrote the original proposal and who saw the report come to near fruition during my time at Brown, I wanted to put the results into non-technical terms, fully realizing that most of my erstwhile colleagues are as untutored in the science of statistics as am I.

Further, I have allowed myself the luxury of giving the study an historical background colored by my own experience and of editorializing in a few places. Seldom do Dr. Nicholson and I disagree on the conclusions that can be drawn from the study, but occasionally we do, and where this is so, it is indicated.

The usual and proper acknowledgments have been expressed by Dr. Nicholson in his forward. I would like only to add particular thanks to Eric Brown for having so capably picked up the pieces which I dropped.

[1]Nicholson, Everard: Success and Admission Criteria for Potentially Successful Risks, Providence, R.I., 1970

Admission Officers who were operating in the late 1950's undoubtedly have different dates to mark the beginning of the great deluge of college applications. My own recollections stem from the time that the Russians put the first satellite into orbit. The amount of recrimination, vocal concern over education, and resolve to do better combined with a number of other factors raised national concern over college and college admission to a fever pitch which has lasted in one form or another to the present time.

In a sense, Sputnik was only a catalyst. Conant had already undertaken his monumental condemnation of the American high school. In addition, there was a new affluence which made college an economic possibility and an increasing technological complexity to life that made college and graduate school an economic necessity.

The same affluence and greatly improved air travel made the home town college insufficiently elegant; for many families, going away to college became one way of announcing the degree of affluence. (As competition for admission to college mounted, the prestige of going away became mixed with the prestige of having a son or daughter who was bright and personable enough to get into a college that no one else could crack.) All of this was exacerbated by a steady increase in the number of seventeen year olds, which reached flood tide proportions beginning in 1962.

For years up to this point a number of colleges had considered themselves selective. That is, they had a sufficient number of qualified applicants in excess of the numbers of their entering classes so they were able to turn away some of the lesser qualified applicants each year. For the most part, however, even those colleges with the most deserved reputation for academic stringency got good classes because of self-selection on the part of their applicant group, rather than any conscious shaping of the

quality of the class by the admission officers or the faculty committee charged with that responsibility. In 1940 for example, Princeton had 925 applications for an entering class of 644 which means that the quality of the entering class at Princeton that year was more the result of the students themselves who decided to apply to Princeton than to any winnowing out process that the admission office might have been able to put into effect.

But during the fifties, particularly in the latter half, selectivity in colleges developed an increasing momentum, and as the ratio of applications to openings in the class became larger and larger, the ability of the admission office to shape not only the quality of the class but the future of the college became apparent.

This was not only an awesome responsibility, which those of us in college admission sometimes thought about when we had the time to do so, but an unique experience. Never before in the history of American education had the college ever decided which students should enter, based not on specific criteria, like 16 Carnegie units, or passing the College Board examinations or having two or three years of Latin as an entrance requirements, but on inexact and subjective criteria.

In other words, the supply of students who had the conventional passports was too large for the number of empty places. Therefore the colleges had to decide on other methods.

Because the faculties of many colleges had felt for years that they had not had students commensurate with the faculties' own intellectual talents, the first attempts at selection were to increase the numerical evaluation of all the measurable criteria. If a student with a college board verbal aptitude score of 600 was good, one who had a 700 score was better, and one who had an 800 (the top of a mysterious scale) was completely

irresistible. For a while, then, there was an understandable escalation of credentials on a simple quantitative basis, and each college proved its excellence by publishing higher median scores each year.

Dean Wilbur Bender of Harvard was one of the first in academic administration to guess that this was not the ideal way to choose a class or to insure the future of the college. His thesis was simple: a student should be capable enough to handle the academic demands of the college, and after that, he should have some additional talent or attribute that made him worth educating. In practice this meant that some of the brightest students who applied to Harvard were rejected and that some of those at the bottom of the applicant group were taken in because of some special ability which the Dean or the Committee was able to see. Other colleges quickly followed suit.

This is now a policy so well understood that high school students concerned about admission to the most selective colleges begin early in their high school careers to make themselves into interesting people by joining clubs, reading books, and otherwise undertaking exotic activities which will make them unusual and hence desirable in the eyes of the admission committee.

For the most part, the judgments made by the admission committees were highly subjective and not manifest any kind of pattern that could be easily described. And the public awareness of the "new" direction in college was slow in coming. For the most part, in the late fifties and early sixties, the brightest students were considered as the best possible candidates for colleges. A bright applicant who failed to make the grade at what has come to be known in America as "the-college-of-your-choice" was often bewildered and his school was characteristically outraged.

In part this was because neither school nor student could shake off the belief that the better the grades and scores the more desirable the candidate. Then when the concept of personal qualities became an accepted ingredient in the admission process, there was a rush by schools and students to tincture the academic qualifications with extra-curricular activities.

Meanwhile the level of public hysteria about college admission was kept high by a barrage of newspaper and magazine articles belaboring some aspect of college admission. College professors whose sons had been refused admission to prestigious colleges wrote vociferously in journals about the dangers of measuring intelligence by objective tests. Guidance counselors in large high schools were running Saturday morning classes in how to take an interview. Full page ads in the New York Times offered (and still offer) courses which purport to raise the students' College Board scores by an amount which all the research of the Educational Testing Service says is impossible.

The admission offices of selective private colleges throughout the land were full; applications were rising. Tuition costs, though increasing, had not yet begun the precipitous rise which may yet price the private colleges out of the market. Campuses were tranquil, minorities had not become a landmark issue, and individual colleges were each doing their best to acquire the best class they could.

It was in the context of this situation that Barnaby Keeney, President of Brown University, and Alvin Eurich, Vice-President of the Ford Foundation met casually and in the course of discussion, brought up the question of good people who were not necessarily outstanding students, and how highly competitive colleges like Brown might look on them when they applied for admission. Eurich expressed the hope that colleges like Brown took some

chances and that they were not simply skimming the academic top off the applicant group. President Keeney assured him that Brown did indeed take some chances and that it was his feeling that their subsequent records justified taking them.

Out of this discussion grew an idea for follow-up studies to determine just how successful these long shots really were.

The Director of Admission at Brown, the writer, drew up a proposal for the Ford Foundation not just to investigate the academic success of risk students in college, but to try to assess the long-term ramifications of the admission of risks.

The accepted proposal was a study of "risk" students at Brown and the degree to which they were successful. To establish an historical basis for the study, it was decided to go back to the only other time in recent academic history when there had been a crush in college admission - immediately following World War II when the colleges had to contend with both the returning veterans and the usual crop of high school applicants. Although the post-war period did not provide a completely analogous parallel for the admission crush of the early sixties, it was roughly equivalent, and just enough time had passed to give the proper perspective.

The admission credentials of the students of the classes of 1950-52 (entering college in 1946-48) were to be studied to determine which of these students might have been considered risks then and what happened to them in college and subsequently. It was the hope of the study that a pattern might emerge which would enable us to identify the risk student who was not only successful in fulfilling his college obligations, but who was subsequently successful in what he undertook after college.

If such a pattern could be determined, it would then be applied to current classes at Brown to see if the identifying characteristics still obtained over a decade later and under greatly changed conditions. If the earlier pattern was corroborated by the results on later students, new and objective criteria were to be developed which would enable admission officers to make risk decisions on the basis of specific and proved criteria rather than on intuition, which had been the basis of most of the selection of risk candidates up to that point.

Finally (and this turned out to be a sore point indeed) the grant proposal had estimated the number of risk students which Brown admitted each year as ten per cent of an entering class. In order that the study might continue with enough material to work on, Brown promised that during the life of the grant, which was to run for seven years, the number of risk students in a class would remain at the ten per cent. Fortunately a "risk" was not more completely described than as a student "whose academic credentials were less than first-rate", which gave both the admission office and the subsequent architects of the study a great deal of room to work in.

Public interest in college admission was high and the time was right for a study of this sort. (A similar program was undertaken at Williams College also.) For the same reasons, public reaction to Brown's study and its promises to take "risk" students was violent, but predictable. The day following the announcement of the grant in January, 1963, the Providence Journal headline over the story said: "Brown Seeks Unqualified Students". This apparently willful misunderstanding of the purpose of the grant continued in much of the publicity which appeared about the study. Periodically during subsequent years, magazine editors have called the Admission Office at Brown to find out what had happened to our policy of admitting unqualified students. In the same vein was the article which appeared in Time magazine

as part of the general announcement of the study. Its article ended cryptically, but portentously: "thus do The Lord and Barnaby Keeney provide for the Tom Sawyers of the land." The name stuck, and the risks have been known since as Tom Sawyers (and occasionally as Huck Finns).

The reason for the misunderstanding is clear. In Brown's promising to continue to take ten per cent of each class in risk students, the emphasis of the grant was changed from the study of admission criteria to a mandate from the Ford Foundation to Brown to admit "unqualified" students. The immediate post-publicity deluge in the Admission Office at Brown is terrible to recall. The tenor of the phone calls and letters can best be characterized by the mother who said: "For years Jeff has wanted to go to Brown, but his record was so bad we thought it wouldn't be possible. But now, with this new program....."

It is interesting, and probably significant, that in the year immediately following the announcement of the Ford Study, the average of College Board scores received by the Admission Office declined for the first and only time since an aggregate report on scores had been reported to the member colleges of the Board. By the next year, the public had forgotten and the scores resumed their upward trend.

Meanwhile, in Providence, the originators of the projects were having a good deal of trouble putting the broad general concept of the risk study into more concrete terms.

First and most important was "risk" itself as a term. Whereas the original grant proposal had talked about students with "less than absolutely first-rate academic qualifications", this was clearly descriptive rather than definitive. The Director of the study realized that while most of his risks had been intuitively defined up until this time, there was a need to make

specific definitions which could be subjected to statistical analysis or the study could not be validated.

The delicate point at hand, therefore, was to find some definitions of risk which could be easily and accurately classified. The other, more paradoxical point is that a "risk" who is successful, is not really a risk at all. In that sense, one of the purposes of the study was to discover what made the apparent risks not so risky after all. Conversely, there was a good possibility that the study would identify students who were apparently not risky but who had hidden seeds of "riskiness" which would make them more likely to failure. This is indeed what happened.

Parenthetically, it should be noted that the simplicity and clarity of approach eventually adopted was not easily reached. At first, the directors of the study thought that predictions could be made by measuring a student's attitudes and motivations by means of a questionnaire which established and measured the student's personal values. However, the difficulty of getting an alumnus to re-create his attitudes fifteen years after the fact was difficult, and the results were of doubtful accuracy. Even more difficult was the problem of getting alumni to complete the elaborate questionnaire on which the study was to be based.

After an initial period of unsuccessful experimentation the current design was adopted with the appointment of the present technical director of the study, and a risk was statistically defined in terms of Verbal Aptitude Test scores of the College Board. The reasons for choosing this one measurement were: it is a standard score easily available for both the earlier classes (1950-52) and the more recent samples (1966-68); it is generally acknowledged to be one of the more important measures of academic

aptitude; it is a measure commonly used by guidance teachers in making college recommendations. On this basis, a group of students in the classes of 1950-52 and in the classes of 1966-68 were separated from the rest of the group and labeled "verbal risks". The cut-off for each of these classes was as follows: Classes 1950-52 Non-Veterans, a verbal score cut-off of 500; for Veterans, a cut-off of 480; and for Classes 1966-1968, a cut-off of 620.

The point of definition is notable for two reasons. The first is that it shows clearly how much had happened to college admission in fifteen years. Second, it is so high in the later classes that the term "risk" as used in this study runs a great risk of not being taken seriously.

The first point is self-explanatory. The second point needs the further explanation that even a student of high ability (and even those at the very bottom of our sample were still well above average in intelligence) is a risk only when the bulk of the group he competes against is of even higher ability. Nevertheless, at least one director of admission remarked about the Ford Study: "Brown's risks are my first choices."

Not all the risks from the Classes of 1966-68 had verbal scores in the 600s. In fact, out of the risk population of those classes, 78% were under 600, 39% were under 550, and just short of 12% (95 students) scored under 500.

The situation that made the Classes of 1950-52 worth studying - that the admission pressures caused by the returning veterans most closely paralleled the admission pressure in the 1960's, also produced two distinct groups in the earlier classes - veterans and non-veterans. Although it was not the main point of the study, one of the most interesting by-products has been a closer look at this group who had been the delight of the faculty because

of their great motivation and seriousness. It is clear from the difference in the cut-off of the verbal scores and in all other academic measures, that the veterans were a less able student group than the younger students who were entering college directly from high school. This study will show later that the motivation of the veterans evened out some differences but was unable to overcome others.

Having defined what a risk student should be, the architects of the study were then faced with a still knottier problem: how is success determined?

The designers soon discovered there was a considerable difference between the general concept of success and the precise definition of the term necessary to make it part of a formal study. Can academic success be properly defined as a summa cum laude average, or could it be simple academic survival - graduation? Was post-graduate success a matter of money only, or were there other subtle factors which colored the determination of whether an alumnus was really a success or not?

In terms of simple pragmatics, the college is concerned whether a student can survive academically and graduate. Some students will naturally distinguish themselves by superlative academic records, but the use of graduation as a criterion for success has particular relevance for risk students. We are not so concerned whether these distinguish themselves as we are concerned whether or not they can survive the academic demands. On that basis, graduation of itself was adopted as one of the marks of success.

The second type of success is indirectly related to academic average, in that it requires admission to graduate school and the successful completion of another set of academic requirements, presumably more demanding than

those met at Brown. Since graduate education is essential for entrance to most of the professions (where distinction is often not necessarily related to money) another criterion of success was an advanced degree.

The third category of success, however, which although as objectively determined as possible still depended upon some subjective evaluations, was reputation for success. The essential premise was that if people think a person is successful, he probably is. The designers of the study wished to move away from shallow measures of success such as income. The suppositionary examples, the slum boy who fights his way into a respected and responsible post in industry versus the lazy young graduate who may inherit a million dollars, clouded the issue and made it necessary to have flexible definitions for such success.

This definition applied only to the Classes 1950-52, which had been out long enough to make some kind of mark on the world. To determine the extent to which this was true, the research team looked up members of these classes in standard biographies such as Who's Who, combed the Brown Alumni Monthly for the five years immediately preceding the study, and finally had panels of classmates go over lists to determine the class "successes" by a wide variety of criteria. In this rather elastic but systematic way was "reputation for success" determined. For the later classes (1966-68) only the first two measures of success could be applied for obvious reasons.

Having defined the problem more exactly, we were now faced with the problem of discovering what information was available and into what patterns that information could be put to produce a predictive device.

Again the special conditions of the study set up limitations on what could be used. We were looking for a way to predict success for future risk

students based on successes previous risk undergraduates had achieved. For the study to be accurate and of the greatest usefulness in the future, the records available to the admission office at the time of admission were the major source of information. Fortunately, Brown University is "attic-minded" and records of all entering students have been kept since the establishment of an admission office in 1932.

Still another reason was important in determining the source of data. If some indices could be derived to predict future success in applicants for admission, they should be based on information which could be obtained from the usual application material. Any indicators of future success which required additional testing of the applicant before admission would make the admission process too cumbersome for the college, might frighten away applicants (who always fear the worst, anyway) and would add to the burden of testing, which already falls too heavily on college applicants.

As a result, one of the first chores which the study undertook was a complete audit of the applications on file for the classes of 1950-52. Potencially useful items such as parents' education and extra-curricular activities in high school were recorded on IBM cards for sorting and analysis. The same was done for the later classes under study (1966-68 and 1969) and the academic records of the College, alumni records, and individual questionnaires were used to bring information about the members of the various classes up to date.

With this as a background, it is enough to say that three major sources of information which might have some bearing on the problem of predicting success were hypothesized - the comments of the school and the degree of enthusiasm they expressed about the applicant; the background of the applicant - parents' education, what kind of school he went to, what size

town he lived in, etc.; and the activities of the applicant in high school. These three areas were developed into four different instruments and then tested by multiple discriminant analysis to determine their efficiency in making predictions. The results were highly gratifying.

Using the four new measurements in a prediction equation, we discovered that it was able to discriminate between risks who graduated and risks who dropped out as well as, or even better than predictions based on the old faithfuls - College Board Aptitude and Achievement Tests. While the report recommends that the new non-academic predictors be used separately from the academic, both used in conjunction provide even more accurate predictions for risks.

Of the four "new" criteria, probably the most effective and the most interesting is the scale we have called the Admission Index. This is derived from the school record form on which the counselor, the principal, or a student's teachers were asked to indicate the degree of their enthusiasm for the student as an applicant to Brown. The school record form in current use, which incidentally is used by about fifty colleges, asks for, among other things, an evaluation of the student in terms of his motivation, and for an overall recommendation of the applicant as a student and as a person. Since these were on a scale to which numerical values could be easily assigned, there was no difficulty in coming up with numbers which reflected the school's evaluation of the applicant.

In the same way, the records of the Classes of 1950-52 were made into a similar index. Although the forms had changed considerably, the basic concept of a scale of enthusiasm had been used and a numerical scale was again easily established. The results show that counselors did and do an unusually fine job of predicting success for their students.

Although the position of "guidance counselor" was a comparatively new one in 1946, when applications for the Class of 1950 were being prepared, its introduction did not affect the efficacy of the Admission Index as a predictor. In all the classes of that part of the study (50-52) the Admission Index separated those who graduated from those who did not; it separated those who we know earned graduate degrees from those who did not. Perhaps most interestingly, the Admission Index (and by definition school officials) was able to "look ahead" to separate those who were rated successful 15-17 years after graduation from those who did not make it.

When the study was moved up to the Classes 1966-68, the Admission Index continued to perform its function and correctly separated the graduates from the non-graduates and those who entered graduate school from those who did not.

The real purpose of this study was to determine the success of risks - and here again, the Admission Index proved its worth. In dealing with the verbal risks only, the Admission Index significantly separated those who graduated from those who did not, those who got an advanced degree from those who did not, and in the case of the non-veterans, it also was able to distinguish the successful from the not successful.

Similarly, in the 1966-68 sample, the Admission Index continued to indicate those who would graduate and those who would enter graduate school.

The 1950-52 verbal risks were also divided into three occupational groups: science-technology, general culture (for example: teacher, artist, lawyer), and business. The Admission Index separated each of these groups and ranked them according to the mean scores: the science-technology group ranked highest, culture next, and business at the bottom. Considering that a career in science requires advanced degrees and that the Admission Index

is really in large part a measure of academic motivation, the scaling of the three occupational groups is not surprising.

However, it is likely that the motivation is more than academic. Each of the occupational areas was divided into three groups to measure the level of success which was accomplished by the alumnus in his field, and again, the Admission Index found those who had the highest professional ranking had also been given the highest ratings by their schools at the time of admission to college.

On the basis of the results, the evaluation of the counselor, school principal, or a consensus of teachers, can be remarkably valuable in making academic and non-academic predictions of surprisingly long range. This is all the more interesting because this is the very area which counselors have been trying to vacate in recent years on the dual grounds that 1) if a student knows the counselor is making judgments about him, he is not likely to give the counselor the confidences and trust which are needed to do a good job of counseling, and 2) that it is not a counselor's job to make predictions but the college's.

The first point has some validity, although in the opinion of many, the success of a counselor in getting the confidence of his students is more the result of the counselor's ability to generate that confidence than the situation in which he works. The second point is rebutted by this study. Although the fact that counselors are remarkably successful in making predictions does not make it their business to do so, it is possible that their reluctance to do so may come from an unwillingness to be held accountable by the colleges for any faulty foresight. The fact stands, however, that counselors, either working on their own information or as collators of information which they get from a variety of sources, are able to

make shrewd and useful predictions of a student's future, better predictions, beyond question, than they had realized they were making.

The concept that socio-economic background is one of the important ingredients in college success is scarcely a new idea, but to measure the extent to which background actually does contribute to success in college and subsequent success is a comparatively new venture. In this study a family-home-school-community questionnaire was devised for recent classes using items from our own experience and from a form developed by Educational Testing Service. Administered to classes after their entrance to Brown, a shortened form was developed which could be included in the admission application without altering the basic information asked for in that form.

One of the most interesting aspects of the Environmental Index was that a portrait of the current "risk" student emerged, based not on verbal weakness alone, but on his background and tastes which would affect the way he used his academic ability.

Joe Risk (perhaps we should call him Tom Sawyer) enters Brown on a scholarship and his budget plans call for him to work at least six hours a week. His high school sent less than 50% on to college and understandably he felt he was not well prepared. Joe's record in high school was uneven (perhaps he was bored), but he was a good athlete, particularly enjoying sports like football and lacrosse. Joe likes people - he hopes to join a fraternity in college, and at high school he would like to be remembered as an athlete or good fellow rather than as a student. Joe, although intelligent, is not an intellectual: his interest in passive pursuits like speech and literary activities is not great; he watched television more than an hour a day in his senior year at high school. Joe when he goes to college

is more interested in the personal opportunities than the academic, and he is going because his ambitious parents, who did not go, want him to.

Of course not all students who answer Joe's description will be risks, and no one student is likely to have quite so many risky qualities as Joe had, but the pattern is there, and it is a familiar one for guidance counselors and admission officers.

Many admission officers would be reluctant to take this description of a risk at face value since it would destroy the possibility of the Cinderella story which every admission officer firmly believes. Yet there can be no question that the details of a student's background, fitted into an environmental index performs a predictive function in much the same way as the Admission Index.

An abbreviated index was developed for Classes 1950-52 from the limited information available on them. A scale of environmental background was developed, and, as for the Admission Index, it was tested for its efficacy in discriminating between success groups at and beyond graduation from Brown. In the total Classes of 1950-52, this measure of background did separate the graduates from the non-graduates, the advanced degree holders from those who did not make it, and those who were successful 15-17 years later from those who were not successful on the basis of our criteria for success.

In applying this index to the verbal risk students, it was again successful in separating the graduates from the non-graduates in the earlier classes, the advanced degree earners from those who were not. In the matter of success 15-17 years later, the younger non-veterans behaved predictably, but the index was unable to sort out the veterans. Here a number of factors may have enabled the veteran to overcome his environment - age,

maturity, or even the G.I. Bill, which gave the veteran considerable financial stability in college. The index also discriminated between those who chose to be scientists, those who entered the professions termed cultural in this report, and those who chose business.

The report makes clear that the Environmental Index in its later and more expanded form is the more valid variable. For recent classes this index discriminated between those of the total sample who graduated and the drop-outs, and again, between those who entered graduate school and those who did not. As the profile of Joe Risk suggests, the more fortunate the background environment, the more likely is the student to be successful. So much for Cinderella.

Also, the verbal risks of recent classes behaved according to plan: the Environmental Index separated those who graduated from those who did not, and again, those who entered graduate school from those who did not.

The implications of all this emphasize what sociologists have been saying for some time: that the lines between classes are hardening and the opportunities to rise out of the class one has been brought up in are not so great as we would like to believe. One note of brightness in this regard may be that the Environmental Index could not be applied with significance to veterans of earlier classes.

If ever an admission officer is bored by a single question at "college nights" it is by the anxious applicant who wants to know "how important extra-curricular activites are". As selective admission became truly selective and added dimensions to the selection process other than College Board scores and class rank, the list of a student's activities in school became one of the important measurements - or so the students surely thought.

In fact, the designers of this study did feel that the kinds of activity a student was involved in during high school would reflect his interests, his character and his subsequent academic performance. On this basis, activities indices were devised.

The chief departure of this study from what had been done in the past is in the separation of types of activities. It was the assumption of the technical director that there were two major kinds of activities - those which are more "active", involving athletics and school politics, and those which are more "passive", involving editing, acting, etc. It might almost be guessed that the former was the kind of activity which went with less active interest in the academic, while the latter group of activities would be those to which a scholar might naturally turn. On the basis of this assumption, scales were used in the Ford study to measure involvement in the two different activities.

The first scale was called LAS, an acronym for activities in the Leadership, Athletic, and Social sphere. The second was called LOMAS - derived from Literary, Oratorical, Musical, Artistic, and Scientific activities. Information about the later classes was obtained from a questionnaire sent to members of those classes.

In the earlier classes such complete information was not available, but on the basis of the activities information which had been reported on the application forms, parallel indices were devised which provided enough similar information about a student to be valid.

The results are hardly encouraging to the many alumni who argue that today's athlete or student leader is more likely to be tomorrow's business tycoon who will rebuild the campus. In the total classes of 1950-52, the "athletic" scale (called by the designer EXC I) was able to perform the

separation function of the other scales - i.e. graduation, advanced degree, and for the non-veterans, success 15-17 years after graduation. In general, in the early classes, those who attained these measures of success were those who were less involved in high school athletics.

In the later classes, tabulation of LAS scores showed that non-athletic students were more likely to go to graduate school, but that participation in athletics was no bar, insofar as graduation from Brown was concerned, for those admitted.

Turning our attention to verbal risks only: for 1950-52 the general import of the study is that the less athletic the student was, the more likely he was to graduate and get an advanced degree. Interestingly, the results on later suceess for this group were not significant. For verbal risks in recent classes, athletic activity seems to have an adverse affect on going to graduate school, but its effect on graduation is not significant.

In the "scholarly" activities (LOMAS) a point of particular interest to admission officers emerged. Although higher scores on this scale were associated with an advanced degree and later success, higher scores showed up for non-graduates in both the earlier and later classes. The implications are clear: an applicant to college who collects activities to put them down on his application but is not genuinely involved in them is apparently an academic fake as well as an activities fake. Admission officers have known for years that the anxious student who is concerned about the importance of extra-curricular activities is likely to sign up for "roster" activities just to make his application look better. The study shows that the student with the smaller number of genuine activities is successful in respect to graduation, although once graduation is achieved, greater involvement in activities suggests greater "success".

There is another possibility in this interesting phenomenon. Instead of deliberate misrepresentation on the part of the applicant, the student with the high level of activities may have a low attention span - he wanders from activity to activity. His degree of interest for any one activity is not that great. Hence, he does not graduate from college because to do so demands too much consistent effort.

When the verbal risks in the earlier classes were divided according to their occupations, and the levels in those occupations, the results were not surprising. High school athletic activity was lowest for those who went into science-technology and highest for those in business. Further, those who reached the highest levels of success in each of the occupational areas - including business - were those who had been least involved in high school athletics.

This study was designed to look at risk students and their potential for success, and success was defined somewhat arbitrarily as beginning with graduation from college.

This is certainly at variance with an older view of a college career where the chief concern was - "What's your grade point average?" However, it arose out of the belief that if the admission office were to invest a place in the class on a risk, it would be unreasonable to expect him to emerge with a Summa average, but that rather we would simply hope for him to get through.

The interesting development of studying the college population with this point of view in mind is that a brand new group suddenly appears which had never been considered before in the business of prediction - the dropout. When success in college is limited to a study of academic averages, the assumption is that there is a steady downhill progression from top to bottom,

and that the group at the bottom, not having a good enough average, is the group that did not graduate.

The fascinating fact is that the drop-out, the student who chooses not to continue (for whatever mysterious private reasons of his own) has traditional pre-admission credentials more like the middle of his college class and notably higher than those of students who are just above the graduation level. What is more, by considering dropouts as a specific group of students, they can be separated out from the rest of an entering class or applicant group by identifiable patterns in their activities, background, and recommendations from high school, which constitute the new variables of this study.

Like all statistical measures, this cannot be applied specifically to one student for whom a prediction is asked, but it is true that the pattern is sufficiently well established so that it can be said; "He looks like the kind of student who drops out", and there will be statistical evidence to back it.

The implications of this for colleges, which are concerned about keeping "paying guests" on board, is enormous. And since tuition income has become a major concern in educational budget balancing, the importance of such predictive measures becomes self-evident.

The same is true for the risk students, for whom this study was set up. Each of the new means of analyzing students that have been discussed can be combined together and in that way form virtually a new dimension in prediction. In comparing these new criteria against those which admission officers have used for years, three of the new scales were found to be more effective than any of the other predictive criteria - including rank in class which up to this time had been the most effective in making

predictions at Brown. This was true not only for the risks, but for the general applicant population as well.

To return to graduation as a form of success. This study shows that it is not only success in its own right (and success for the admission officer who has successfully chosen a successful risk) but that success follows success. Of the Class of 1950-52, a distinctly higher percentage of the class rated successful 15-17 years after graduation had graduated. Put another way, if you did not graduate from Brown, your chances of being successful later were distinctly diminished. The interesting point is that the fact of graduation is a great leveler - it did not matter whether a student was a veteran or a risk, once a student had graduated, his chances for future success were the same as those of any other graduate in his class. The degree had equalized the risk.

The second measure of success was earning an advanced degree. Like the first measure of success, this is an academic achievement, and it is not remarkable, therefore, that the best predictor for this type of success is the same as that for success in college - that is, the scale derived from the counselors' ratings, the Admission Index. Thus the ratings made on a student in his senior year of high school maintain their validity through graduate school, which suggests that patterns of motivation are set early and remain constant for this group.

Another point of considerable interest is the difficulty encountered by successful, or graduated, risks in entering graduate school. In the earlier classes, the ratio of graduates who entered graduate school, non-risks to risks, was two to one. In the later classes, the differences had evened out more, but the ratio of non-risks to risks was still 3:2. The implications are clear - the risk student, although selected by Brown for

admission and able to graduate, was still denied entrance to graduate school, probably on the basis of objective test scores. Since not all of the risk students of earlier or later classes were denied graduate education, this is not a universal or standard policy. Also, it is impossible to know how many of the risk students from all colleges who applied for admission to graduate school were admitted ... just as Brown did not admit all of the potential risk students who applied to Brown in any given year.

Nevertheless, one of the major implications of this study, one which has been known to admission officers for many years, is that motivation is more important than test results. It seems clear from this study that one objective way to measure academic motivation has been established - the Admission Index.

The third and final measure of success was found in an attempt to make objective the everyday definition of the word. As described earlier, juries of alumni commented on their classmates, major biographical references were consulted, and the alumni notes section of the Brown Alumni Monthly for the five years previous were read so that the rise to eminence of any members of the classes of 1950-52 would be recorded. The criteria (which were not ironclad) were as follows: academic or research accomplishment (including books, inventions, etc.); employment status; status in the local community; status on the national level; income (or the reputation for it), contributions to Brown (an involuted form of success, but no less important to the University); and a catch-all, general reputation, which was designed to take care of alumni of note who did not fall into any of the other categories - actors, for example.

When the results were tabulated and the smoke had cleared away, a pattern of success emerged which was surprising in some of its aspects. For

example, the veterans of the post-war classes, although equalizing the academic differential by achieving as good college records as the non-veterans despite poorer academic qualifications, were not correspondingly successful 15-17 years after graduation. The designer of the study has drawn the conclusion that success is more the result of age rather than ability, and that the advantage lies with the younger graduate.

It seems a reasonable guess that the non-veterans, though less mature, had more material backing and that this paid off over the years to a greater extent than the extra hard work which the veterans had expended in getting good grades.

When the samples were equalized for formal education through graduate school, the best indicators for success nearly twenty years in the future were the Environmental Index <u>before</u> admission, and the best predictor after the student has entered college are his grades at the end of the first semester. Using grades in college as a measure, the verbal risks who would be successful 17 years later had identified themselves by their academic achievement at the end of their first semester in college.

As described before, the graduates were divided into three groups according to their occupations, and these occupational groups were divided according to the level achieved in each. Some of the findings were:

Businessmen tended to develop from students with lower verbal abilities.

Scientists get to the top levels more quickly than any others. (It is often said of chemists that if they don't make their big splash in their twenties, they probably won't make it.)

Success in business comes at a much more sedate pace than in the other two classifications. For that reason, it is quite possible that the time span of this study was not long enough for those in business really to

reach their peak - perhaps 25 years after graduation is the optimum time to make these judgments.

The achievement of an advanced degree does not seem to increase the probabilities for success of the "culture" group.

Success in business does not depend at all on an advanced degree.

The scientists, as a group, were not so athletic in high school as their contemporaries who came to Brown.

The businessmen, as a group, had been more athletic in high school than their Brown classmates.

Scientists were students with the highest promise of academic success in high school; businessmen were students who showed the least academic promise. It should be remembered that "the least promise" does not mean in the entire high school, but of those who entered Brown and were compared with the rest of their classes at Brown.

Out of all of this emerges the portrait of the two diverse student types.

The first is a scientist, Steve. He came from well-educated parents who live in a suburb with a good school system. From the beginning, he was a good student at school, and while he was not anti-social, his activities were likely to be musical or literary in tone. While not uninterested in sports, he was not on athletic teams in high school. He did well on the College Board tests, and went off to Brown with the highest recommendations of his school and their firm belief he would do well. He did, subsequently went to graduate school where he achieved his doctorate, and is now teaching and consulting.

His classmate, Tom, also came from a comfortable family background, was somewhat less likely to be interested in reading than in games for

recreation. In high school, he was a good, but not a top student. He was active in social activities at school and had been elected to various offices at school. He also played football. His College Board tests, when he took them, were a disappointment, but thanks to his activities in school, and quite possibly the good interview he had at the Admission Office, he was admitted to Brown. Gathering his considerable physical energies together, Tom decided to devote himself to doing well in college, and his record at the end of the first semester showed he could be a student if he wanted to. Thereafter he had no real academic trouble, and graduated. Subsequently he went into business, has done well, and appears to be a good bet for the future.

Steve and Tom represent two poles on the scale; there are many in between.

Now that the formal part of the study is over, it is clear there are still many questions unanswered. For example, can measurements which were developed for the Brown population be used to help all other colleges, or just those with populations approximating Brown's? The designer of the study, Everard Nicholson, feels that the new measures will be even more successful in other colleges which have more variety in their populations.

What about environmental background? All other factors being equal, evidence of a higher environmental background presages more success in college and more success later on. Conversely, a lower environmental index does not doom the student to failure if other indicators are working for him. Nevertheless, the importance of environment is clear throughout the study. Does this mean that Brown and other colleges should be cautious about taking students from deprived backgrounds? Further, the study suggest that a student is more likely to be successful in a college filled with

other students just like him.[1] If this is so, shouldn't we ignore it, believing exposure to different ideas and attitudes is education?

My final question is: does this study really eliminate the need for some sensitive and intuitive handling of admission applications? Since every admission officer worth his salt firmly believes in this approach let me say that the study was not intended to do this, but only to aid him.

In part the answer comes from a brief further description of what the study covered. After establishing one kind of risk (the verbal variety) the study went on to pick out several more - the under and over achievers.... and the "split" scores - high scores in the verbal area on the College Board tests, but low in math, and vice versa.

The study proved out what most admission officers know by experience: students who have low measured ability but who present evidence of high academic achievement prior to admission - the "overachievers" - are good students to bet on. Students with high ability scores and not such good academic achievement are poor bets. The important point is that while most admission officers identify these kinds of risks by sight, and in so doing miss some, the machine will bring them out into the open. They can then be subjected to the intuitive wisdom of the admission officer.

It is an interesting circular situation. Objective measurements can support the intuition born of experience. For example, it was no surprise to learn that "overachievers" perform better as science students, or that students with very high mathematical aptitude scores and low verbal scores do not perform remarkably well as science students. This study verified this intuition and it can now be part of the equipment available to the admission officer.

[1]This is a point at which this author and Dr. Nicholson disagree. The reader is referred to page 89 ff. of the technical report.

On the other hand, to rely on the objective measurements as if they were perfect predictive devices is to negate the whole concept of selective admission which permits deviations from the formula if that seems in the best interests of the college. This is the major advantage of the private institution, that it can develop better tools to work with, but still reserve the option of choosing to ignore them at times.

What these new instruments do best is to permit longer-range planning of a kind that few (if any) colleges have embarked on. The immediate questions of open admission, no grades in college, no grades or class rank from secondary schools, diminishing numbers of openings in graduate schools and increasing financial crisis can be examined more rationally by the results of this study, and appropriate admission decisions made.

But there are still more important questions which go beyond the immediate problems of admission to the current class and the classes of the next five years. What kind of graduates does a college want for itself twenty-five years from now? Will the students admitted now have the influence to help their alma mater and the interest to do so?

While it would be hubristic to say that we have a means to predict the future, we certainly do seem to have the means to peer further into the future of an alumnus than anyone has had in the past. It seems only sensible therefore that colleges engage in five, ten and even twenty-five year projections of the kinds of students they want, using the same means to project this as are now used for financial projections. Surely the long-range educational aims of a university are no less important than how to finance those aims, but more is needed than broad statements about "the best possible education." The tools which this study has devised are possible beginnings of an entirely new line of attack on a fascinating problem.

With the right combinations of cooperation, continuing research may make it possible for admission to become a science of coruscating prescience.

In the meantime, the best admission officers will combine science with their special brand of extra-sensory preception. It drives the statisticians wild, of course, but the best admission officers expect that.